CLAIMS

What is claimed is:

1. A method performed by a class based queuing architecture in a communications network comprising:

receiving packets of a first class generated by a plurality of sources for being stored in a shared queue for said first class;

detecting bits in said packets;

associating at least one first congestion algorithm with a first set of said bits in said packets, said first congestion algorithm corresponding to a bandwidth associated with said first set of bits;

associating at least one second congestion algorithm with a second set of said bits, said second congestion algorithm corresponding to a bandwidth associated with said second set of bits;

counting a number of packets stored in said queue having said first set of bits in said packets;

counting a number of packets stored in said queue having said second set of bits in said packets;

determining whether to drop packets having said first set of bits prior to entering said queue based upon at least said first congestion algorithm; and

determining whether to drop packets having said second set of bits prior to entering said queue based upon at least said second congestion algorithm.

2. The method of Claim 1 further comprising dropping packets having said first bits in accordance with said first congestion algorithm and dropping packets having said second set of bits in accordance with said second congestion algorithm.

3. The method of Claim 1 further comprising calculating a first average occupancy of packets having said first set of bits stored in said queue, where a selection of said first congestion algorithm is at least partly dependent on said first average occupancy; and

calculating a second average occupancy of packets having said second set of bits stored in said queue, wherein selection of an algorithm for said second congestion algorithm is at least partially dependent on said second average occupancy.

4. The method of Claim 1 wherein said first set of bits and said second of bits identify a respective customer providing said packets.

5. The method of Claim 1 wherein said first set of bits and said second set of bits identify a respective node that originated said packets.

6. The method of Claim 1 wherein said first set of bits and said second set of bits comprise multiple protocol label switching (MLPS) labels.

7. The method of Claim 1 wherein said first set of bits and said second set of bits are virtual local area network (VLAN) labels.

8. The method of Claim 1 wherein said first congestion algorithm and said second congestion algorithm are drop count algorithms that signify a respective percentage of packets having said first set of bits or second set of bits to be dropped prior to being stored in said queue.

9. The method of Claim 8 wherein said drop count algorithms identify that every nth packet having said first set of bits or said second set of bits is to be dropped.

10. The method of Claim 1 wherein said associating at least one first congestion algorithm and said associating at least one second congestion algorithm comprises:

selecting said first congestion algorithm and said second congestion algorithm from one or more tables depending on an occupancy of packets having said first set of bits or packets having said second of bits in said queue.

11. The method of Claim 1 wherein said first set of bits in said packets are not modified prior to being stored in said queue, and said second set of bits in said packets are not modified prior to being stored in said queue.

12. The method of Claim 1 wherein said associating at least one first congestion algorithm and associating at least one second congestion algorithm comprises:

determining a first average occupancy of packets having said first set of bits in said queue and a second average occupancy of packets having a second set of bits in said queue;

applying said first average occupancy and said second average occupancy to at least one table, an output of said at least one table signifying said first congestion algorithm and said second congestion algorithm for dropping packets.

13. The method of Claim 12 wherein said at least one table comprises a plurality of tables, a first table being associated with packets having first set of bits, and a second one of said tables being associated with packets having said second set of bits.

14. The method of Claim 12 wherein said first average occupancy and said second average occupancy are determined by deriving a fraction of the instantaneous occupancy in said queue of packets having said first set of bits or said second set of bits and adding a fraction of a prior average occupancy of said packets having said first set of bits or said second set of bits in said queue.

15. The method of Claim 12 wherein said output of said at least one table is used for dropping every nth packet having said first set of bits or second set of bits before being stored in said queue.

16. The method of Claim 1 wherein said first congestion algorithm and said second congestion algorithm are random early detection (RED) algorithms performed on aggregate flows of packets.

17. The method of Claim 1 wherein said method is performed in a line card in a node said network.

18. The method of Claim 1 wherein said method is performed in a ring card in a node in said network.

19. The method of Claim 1 wherein said first set of bits and said second set of bits identify a source node, and said method allocates node bandwidth by application of said first congestion algorithm and second congestion algorithm based on a source node for said packets.

20. A node in a communications network comprising:

a plurality of class queues, including a first class queue;

a first packet counter counting the number of first packets in said first class queue, said first packets having a first set of bits in a header,;

a second packet counter counting the number of second packets in said first class queue, said second packets having a second set of bits in a header,;

look-up tables associated with said first packets and said second packets, said tables associating at least one first congestion algorithm with said first packets, said first congestion algorithm corresponding to a bandwidth associated

with said first packets, and associating at least one second congestion algorithm with said second packets, said second congestion algorithm corresponding to a bandwidth associated with said second packets; and

circuitry to drop said first packets prior to entering said first class queue based upon at least said first congestion algorithm and drop said second packets prior to entering said first class queue based upon at least said second congestion algorithm.

21. The node of Claim 20 further comprising circuitry for calculating a first average occupancy of said first packets stored in said queue, where a selection of said first congestion algorithm is at least partly dependent on said first average occupancy, and for calculating a second average occupancy of said second packets stored in said queue, wherein selection of said second congestion algorithm is at least partially dependent on said second average occupancy.

22. The node of Claim 20 wherein said first set of bits and said second of bits identify a respective customer providing said packets.

23. The node of Claim 20 wherein said first set of bits and said second set of bits identify a respective node that originated said packets.

24. The node of Claim 20 wherein said first set of bits and said second set of bits comprise multiple protocol label switching (MLPS) labels.

25. The node of Claim 20 wherein said first set of bits and said second set of bits comprise virtual local area network (VLAN) labels.

26. The node of Claim 20 wherein said first congestion algorithm and said second congestion algorithm are drop count algorithms that signify a respective

percentage of said first packets and said second packets to be dropped prior to being stored in said queue.

27. The node of Claim 26 wherein said drop count algorithms identify that every nth one of said first packets or second packets is to be dropped.

28. The node of Claim 20 wherein said first congestion algorithm and said second congestion algorithm are selected based on an average occupancy of said first packets or said second packets in said queue.

29. The node of Claim 28 wherein said average occupancy is determined by deriving a fraction of the instantaneous occupancy in said queue of said first packets or said second packets and adding a fraction of a prior average occupancy of said first packets or said second packets in said queue.

30. The node of Claim 20 wherein said circuitry to drop packets drops every nth one of said first packets or said second packets before being stored in said queue.

31. The node of Claim 20 wherein said first congestion algorithm and said second congestion algorithm are random early detection (RED) algorithms performed on aggregate flows of packets.

32. The node of Claim 20 wherein said tables are located in a line card in said node.

33. The node of Claim 20 wherein said tables are located in a ring card in said node.

34. The node of Claim 20 wherein said first set of bits and said second set of bits identify a source node, and said first congestion algorithm and said second congestion algorithm allocate node bandwidth based on a source node for said packets.